October 2018

The
Ballarat
Naturalist

Outfoxing *Vulpes vulpes* for biodiversity conservation

Dr Bronwyn Hradsky, a post-graduate researcher in the Quantitative & Applied Ecology group of the University of Melbourne gave us a fascinating overview of the research that she and other researchers have, and are currently undertaking, to better understand the behaviour of Red Foxes (*Vulpes vulpes*) and consequently improve control of this very effective introduced predator.

Photo: Matt Rees

In the 150 years or so since they were introduced to Australia, foxes are said to have caused the extinction of endemic animals (58 species), third behind cats (97 species) and inappropriate fire regimes (63 species), with land-clearing the next greatest cause of extinction (45 species). Given the severity of the impact that foxes have had, and continue to have, on Australia's unique fauna the research undertaken by Bronwyn and her associates is invaluable and urgent. It provides information on fox behaviour to ensure optimal targeting and efficacy of control efforts and efficient allocation of the considerable millions spent by land managers each year.

Bronwyn's presentation covered four research projects:

1) Habitat selection by forest-dwelling red foxes

2) Invasive predator and native mammal responses to prescribed fire

3) Effects of landscape-scale fox-baiting on invasive predators and native mammals

4) Prediction of the effects of integrated predator and fire management.

During her PhD research, Bronwyn soon learnt that little was known about fox behaviour because they were so difficult to study. Her first project in the Otways focused on habitat selection by forest-dwelling Red Foxes. Bronwyn attempted to trap foxes with a soft jaw trap, tranquilize them (because she wasn't keen on getting bitten) and secure a tracking collar around their neck in order to map their movements.

Unexpectedly, the first fox studied covered much greater distances during the day than at night.

Bronwyn learnt many things: that-

- roads act as conduits and foxes are more likely to investigate, and thus be caught by traps near roads rather than in forests
- roads facilitated foxes movement, enabling them to travel further and at least twice as fast
- foxes have home ranges of up to 7km radius
- foxes travel regularly between forest and farm
- foxes are active night and day but have very different nocturnal and diurnal patterns of movement
- foxes preferred to stay close to water and the edges of farmland and forest in the day and night where they got the best of both worlds
- foxes were more likely to be found in disturbed habitats at night
- people are supporting fox populations by making it too easy for them to get food, i.e. BBQs not cleaned/ shut, abandoned dog food, unsecured chooks
- immediately after a planned burn, foxes used to commute, hunted exclusively in the burnt areas for three weeks: the assumption being that in these areas were injured and dead animals and much less-protective cover for other remaining living creatures

In Project 2, to determine the habitat preferences and movement patterns of both native mammals and foxes, and how they were affected by prescribed fire, fifty-four motion-sensing cameras were set up in planned-burn areas prior to burning, and in nearby control sites that were to remain unburnt. The composition of fox scats was also studied to determine their diet before and after the burn.

It was observed that foxes are more likely to be found where the understorey was quite open. Echidnas, Long-nosed Bandicoots and Bush-rats preferred high levels of understorey vegetation which was less than 50cm tall. Post-burn, native mammal occurrence declined during the study but burn effects were not always clear.

In the planned-burn site, the composition of fox scats showed that 55% of their diet was kangaroos and wallabies (including road-kill), with 18% comprised of medium-sized native mammals like echidnas, bandicoots and bush-rats. 10% was introduced species such as house mice and Black Rats, and invertebrates, with seeds and fruit making up the remaining 17%.

A concerning trend after the burn was that the consumption of echidnas, bandicoots and bush-rats increased dramatically to 54%. The assumption being that these creatures were easier to catch once the understorey was opened up by fire. The consumption of kangaroos and wallabies declined to 29%, and invertebrates to 9%. With a number of variables at play, it was difficult to draw solid conclusions.

Project 3 is still underway with six researchers, including Bronwyn, studying the effects of landscape-scale fox baiting on invasive predators and native mammals in two regions.

A number of other projects are being undertaken concurrently, with the teams hoping to work together and share information. One site is in the Lower Glenelg National Park, the home to bandicoots and potoroos. Some areas have been baited with 1080 which breaks down within two weeks and does not bio-accumulate, and some other areas were not baited. The primary aim is to help the population numbers of the native species recover.

The second site is known as the Otway Ark, with DELWP-baited areas and unbaited areas. This landscape-scale program started last November. Camera traps have been set-up 700m apart in a grid pattern.

Another research team is studying cats in the area using baits with tuna oil and feathers. These researchers have identified individual cats and estimate there is 1 cat/ km^2 in these wet forests, five times more than pre-study estimates - definitely a problem species! Cats prefer active, moving prey. Only a couple of months ago, legislation changed to allow cat control on public land. Until then, they were protected under the Domestic Animals Act. A student is monitoring numbers of Long-nosed Potoroos at 6% of her sites, and Long-nosed Bandicoots at 18% of them. Another group is collecting fox scats to do DNA identification of individual foxes to study the extent of MESO-predator release - if you take out the top predator (fox), you can have a huge spike in numbers of the next predator down (cat).

The fourth project aims to predict the effects of integrated predator and fire management, to ultimately allow fox control programs to be tailored to particular contexts for maximum effectiveness, e.g. vegetation types, baiting intensities, times of year, planned fire regimes.

Even in the face of prolific numbers of such successful predators, Bronwyn feels optimistic about the future of species like potoroos and bandicoots given that they have already survived 150 years of foxes and cats. The impressive research that she is involved in will certainly contribute to the effective application of control measures. Her Blog site has resources to help identify images in camera traps:

www.wildzoologist.wordpress.com

Emily Noble

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Excursion: FNCB at Narmbool

Seventeen Field Naturalists were treated to the expansive beauty of Narmbool, a 2000 hectare farmstead operated by Sovereign Hill and located South of Ballarat. Generations of graziers had taken advantage of the fertile pastures, which, when enhanced with fertiliser, produced quality wool for sale in foreign markets. With the price of wool not being what it was and the change in management in 2000, the outlook for the sheep became decidedly more culinary than crafty.

Being surrounded by prospective chops, loins, racks and shanks it is perhaps fitting that Narmbool is a local Indigenous word meaning ‘fatty liver’. This local *foie gras* once belonged to possums that gorged on the vegetation of the volcanic soils.

When we first entered the garden through its thick wooden farm gate and rabbit proof fence, we were taken to a native garden planted with various native lilies and herbs such as Yam Daisy and Peppercress that are to be used by the restaurant chef, once established. (*All botanical names given in the list at the end of the report.)* A winding path, lined with native trees, shrubs and grasses brought us to a large pond with water so clear we could see the native Water-milfoil that lined its outer edge.

Our guide, Mathew Dowler, who has been working at the farm these past

Photo: Narmbool Homestead and front gardens CH

eleven years, explained that the pond owed its clarity to this lake weed. Although none were spotted, the pond is home to six native frog species from endangered Growling Grass to common Striped Marsh. A boardwalk takes guests around the front of the pond, also giving a splendid view of the sloping garden on its other side.

The Victorian bluestone farmhouse is the very picture of Colonial respectability, with its fresh heritage paint, formal gardens and exotic planting scheme.

Unlike the house, however, the plants and trees are new; the old garden having been almost wiped clean by the most recent fire with one third of the Scotsburn Fire-ground impacting this one unlucky farm.

Beyond the lawn that occupies the area immediately in front of the entrance doorway are two lower tiers. Down stairs in the central courtyard are uniform beds lined with box, containing hybrid tea roses and pink and white oriental hellebores as ground cover. Two white wooden pergolas flank the court; their posts wrapped with clematis of the "group one" pruning variety, which are only beginning to show signs of life. The lower tier contains a second courtyard with a circle-shaped bed of native plants as its centrepiece. Here, symbolic beds reflect the egalitarian nature of Wadawurrung society; hierarchy did not divide people, they were equals. Large pots border the rest of the court and are filled with so much thyme it cascades down the sides of each, complementing the naturalistic feel of this tier. Joining the tiers is a central blue gravel path.

While Spring seems to have come early this year, the flowering was typical, carried mainly by hellebores, daffodils and *Viburnum tinus*; the latter making a half crescent hedge which survived the fires owing to its retardant quality.

The bottommost point of the lowest tier contains an exotic woodland of birch with an undergrowth of English daffodil, seemingly naturalised among yet more hellebores. Once through the bottom gate and past the rabbit proof fence, we came upon a field of freshly planted oak, which included three cork oaks, whose small, holly-like leaves are evergreen. The bark is decades from harvest as they are quite slow-growing.

It is a garden of European delights designed for the occupants of the house, who reside there for three days each week. The exotic plants also serve as a fire resistant protective zone for the house, very nearly lost last time. Notably, Birch and Oak are classed by Tasmanian authorities as highly inflammable and are listed as fire retardants in West Australia.

Photo: Man-made lake CH

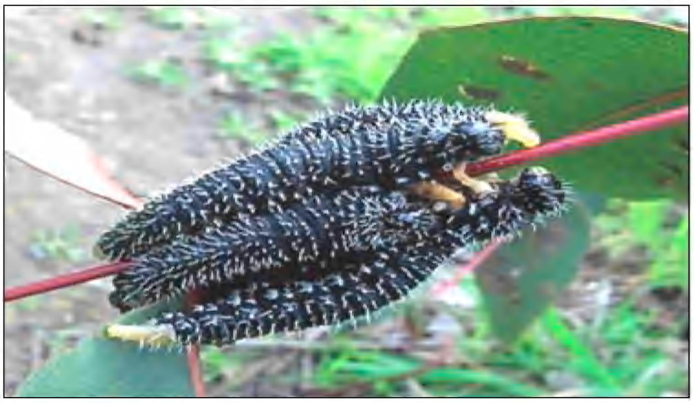
Away from the house, further down the hillside, is a man-made lake. Its primary function is as a source of drinking water and it is fed by twelve natural springs, each flowing from various layers of lava deposit. We followed the path around its edge and took time to notice native trees, predominantly eucalypts and wattles, as well as shrubs and grasses. Initially, the gardeners had fenced off the fire-damaged areas to observe which plants regenerated.

The damage rendered by the fire, which was considerable around the lake, has lent advantage to exotic weed species. A giant pampas grass sat by the water's edge, unharmed. Deceased trees still standing have been left for habitat.

On the causeway, flick weed predominates along with Kangaroo Apple, although they are severely frost-damaged at this time of year. Countless bird boxes, made at La Trobe University and Buninyong Men's Shed, can be seen in the tall trees, although it was evident that wildlifeother than birds frequented them, including ringtail possums and European honey bees.

Of particular interest to the group were two clusters of saw-fly larvae on the branches of a young eucalypt.

Photo: Saw-fly Larvae VH



Back at the homestead we explored the kitchen garden with its glorious bay laurel arch that, perhaps mockingly, adorned the path to the toilet.

After lunch in the sunny homestead gardens we embarked on our tree planting activities. On two patches of paddock, chemically cleared of grasses, we planted 180 native trees and shrubs: Tree Everlasting, Sweet

Photo: Tree-planting army getting instructions VH

Bursaria, Blackwood, Manna Gum, and Swamp Gum. The planting sites were divided due to volcanic rock preventing fence posts from being driven into the ground.

After about one and a half hours of planting, the group were then taken by bus to the edge of the paddock so we could view a huge Wedge-tailed Eagle nest located in the treetops. We were fortunate to witness an occupant in flight high above us, warring with what could only be a magpie. Members also spotted the carnivorous Scented and Pimpernel (Scarlet) Sundews.

Along the path we further observed the skeletal remains of an Eastern grey, which had lain undisturbed to provide an almost exhibit-worthy display of its structure from teeth to tail.

Photo: Skeletal remains of an Eastern Grey CH

An observant member spied the shape of a moving creature making its way up a distant hill. With binoculars it was identified as an echidna. No koalas were spotted, owing to their rapid decline on the farm in recent years indicated by the ‘sightings board’ used by school students which listed no sightings of koalas. It is currently thought by some that chlamydia, naturally present in the marsupial, becomes deadly when individuals are stressed, primarily due to local environmental pressures.

On our return journey we stopped to investigate the wonderful school camping facilities and interpretation displays. It could easily have served as a ski lodge, had we the snow. Given the sheer magnificence of the view from this facility it is a relief to see it mostly used for educational purposes.

Many thanks to Matt for his excellent guidance around the property.

Report: C. J. Coventry **Photos** CH (Carol Hall) VH (Val Hocking)

List of plant species seen on the excursion Narmbool

Botanical name	**Common name**
Natives:	
Acacia mearnsii	Black Wattle
Acacia melanoxylon	Blackwood
Anthropodium strictum	Chocolate Lily
Bulbine bulbosa	Bulbine Lily

Bulbine semibarbata	Leek Lily
Burchardia umbellata	Milkmaids
Cassinia arcuata	Drooping Cassinia
Chrysocephalum apiculatum	Common Everlasting
Drosera aberrans	Scented Sundew
Drosera glanduligera	Pimpernel Sundew
Eucalyptus ovata	Swamp Gum
Eucalyptus pauciflora	Snowgum
Eucalyptus rubida	Candlebark
Eucalyptus viminalis	Manna Gum
Lepidium sp.	Peppercress
Microlaena stipoides	Weeping Grass
Myriophyllum papillosum	Robust Water-milfoil
Rytisperma sp.	Wallaby Grass
Solanum aviculare	Kangaroo Apple
Themeda triandra	Kangaroo Grass

Exotics:

Betula pendula	Silver Birch
Buxus sempervirens	Common Box, European Box
Cardamine hirsuta	Flickweed, Hairy Bittercress
Clematis sp.	Clematis
Cortaderia selloana	Pampas Grass
Fraxinus angustifolia	Narrow-leafed Ash
Helleborus orientalis	Oriental Hellebore
Hydrangea macrophylla	Hydrangea
Laurus nobilis	Bay Laurel
Malus pumila	Apple
Narcissus pseudonarcissus	Wild Daffodil, Lent Lily
Prunus serrulata	Japanese Cherry
Pyrus calleryana	Ornamental Pear
Quercus robur	Common Oak, English Oak

Quercus suber	Cork Oak
Salvia officinalis	Common Sage
Thymus vulgaris	Common Thyme
Viburnum tinus	Laurustinus
Wisteria frutescens	Kentucky Wisteria

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Excerpts from Club Meeting Minutes September 7, 2018

Opening Pres John Gregurke welcomed 25 members and 3 visitors. Apol.: John Petheram, Bill & Kathy Elder, Steve Sorrell, Bernadette Cheesman, Bill Murphy, Elspeth Swan, Paul Norquay, Elizabeth & Denis Thurgood and Mark Moravec.

Business Arising from Previous Meeting The final version of the FNCB's Life Membership guidelines was distributed electronically to members following the August club meeting, as was a Nomination Form. The new FNCB policy on ethical use of technology on field trips was also circulated electronically to members following the August club meeting.

Business Arising from Correspondence:

Partnership with Ballarat Environment Network to undertake grant application/ project involving flora surveys and preparation of an illustrated flora list for Victoria Park- a Letter of Support was provided to BEN for the Community Impact Grants Program application submitted to City of Ballarat on Sep. 3, 2018.

Spiny Rice-flower monitoring at Skipton Common: Several FNCB members participated in Spiny Rice-flower surveys organised at Skipton Common throughout August by Emily through her role at Ballarat Environment Network, during which the milestone 1000th specimen of this critically endangered plant was recorded. We have now counted 1128 plants, with one more survey for the winter flowering season planned soon. Many thanks to the FNCB members that have participated in these surveys!

Volunteers to write up tonight's presentation- E. Noble/ B. Hradsky and Saturday's field trip- Cam Coventry.

Show & Tell/ Field Reports

Carol Hall brought along a series of photos showing photos early in the establishment of the North Gardens Wetland in the early 2000's. In 2002, 65mm in one night filled the wetland.

John G. reported on the request from DELWP's media department re. Club member's involvement to promote Wattle Day on Sep. 1. A short video featuring John G and Carol H was filmed at North Gardens Wetlands to promote wattles, Wattle Day and the Club's "Wattle Book". Has been posted on the DELWP, BEN and FNCB Facebook page.

Shirley returned to Melton Botanic Garden by rail, with a lovely walk to the gardens along Toolern Creek. Last year the Eucalypts were flowering beautifully at this time, but this year were still only budding. Many plants were flowering and the Gardens are well worth a visit.

Les reported three Stubble Quail flushed out whilst cultivating stubble in a paddock, and 12 Blue-winged Parrots in Bungaree.

Roger confirmed that there are two tree-ferns species growing in Woowookarung- Rough Tree-fern *Cyathea australis* and Soft Tree-fern *Dicksonia antarctica*. He showed us the staggering amount of spores produced by a single frond.

Emily reported the first pair of Hardhead Ducks at the wetland at her property in Scarsdale.

Claire asked when the Palm Trees appeared at the Civic Hall and why? Two weeks ago. Claire's favourite sightings in Canada were Hummingbirds at a bird-feeder near her window.

Ken reported Yellow-tailed Black Cockatoos flying very low above him in his front garden at Midlands Terrace.

Carol noted that Great Crested Grebes are coming back to Lake Wendouree and Rainbow Lorikeets are mating.

Wayne observed a Pacific Black Duck crossing Sturt St near "Red Rooster" with one duckling.

Andy used a Longworth trap for the first time at a field centre in Shropshire, near Shrewsbury, UK. It is a small mammal trap with two compartments, and detected animals like field mice, Bank Voles and Shrews, none of which Andy had seen before.

October 21st Wildflower walk and pop up trail

FNCB & FoCC are conducting a wild flower trail walk in the north part of the Park on Sun. Oct 21st starting at 10am.

The trail will begin at Wilson St. water tanks and be guided through a very diverse wildflower rich area. Parking areas will be signed.

The trail is on bush tracks and solid footwear and appropriate clothing is advised. It involves descending into a bush creek area and has some steep sections. The walk will be guided by local wildflowers experts.

The FNCB have produced labels for the wildflowers and will leave the trail in place for the week after the initial walk.

***Contact**: J Gregurke*

CALENDAR 2013

October

Fri 5	*Native bees & other insects in a pollinator's garden*: Linda Rogan, Victorian entomologist
Sun 7	Excursion –*Illabarook NCR & Rail Reserve:* E Noble FNCB

November

Fri 2	Stella Bedggood Memorial Lecture- *Effects of Urbanisation on the Tawny Frogmouth:* Dr. Marion Weaving, Teaching Associate (Monash Uni.) & Urban Ecologist
Sun 4	Excursion *Enfield State Park-* joint field trip with Geelong FNC: Emily Noble, FNCB

Committee

President	John Gregurke
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Secretary	Emily Noble
Treasurer	Les Hanrahan
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Meetings are held at Federation University Gillies St Campus on the first Friday of the month at 7.30pm.

Excursions: Leave from the carpark of Federation University Gillies St Campus at 9.30 am, unless otherwise advised.

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